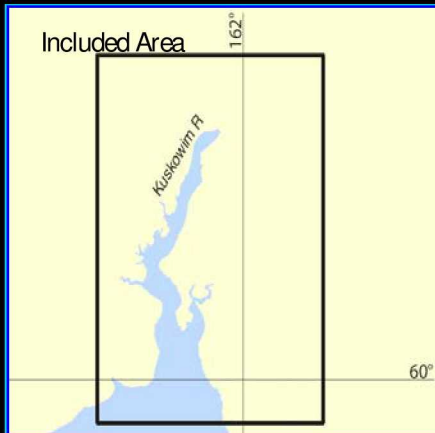


# BookletChart<sup>TM</sup>

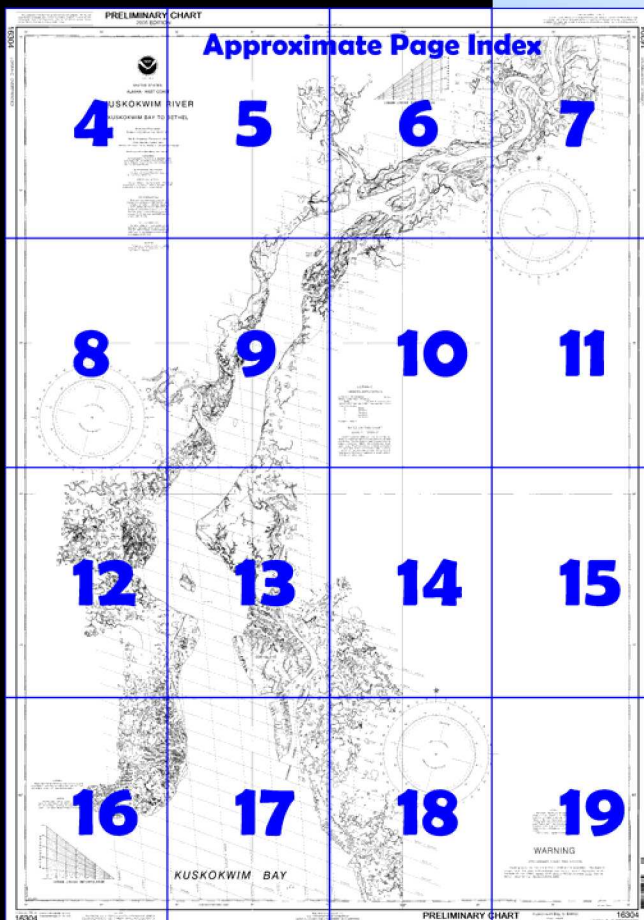
## ***Kuskokwim River - Kuskokwim Bay to Bethel***

(NOAA Chart 16304)



A reduced scale NOAA nautical chart for small boaters. When possible, use the full size NOAA chart for navigation.

- ✓ Complete, reduced scale nautical chart
- ✓ Print at home for free
- ✓ Convenient size
- ✓ Up to date with all Notices to Mariners
- ✓ United States Coast Pilot excerpts
- ✓ Compiled by NOAA, the nation's chartmaker.



*Home Edition (not for sale)*

### What are Nautical Charts?

Nautical charts are a fundamental tool of marine navigation. They show water depths, obstructions, buoys, other aids to navigation, and much more. The information is shown in a way that promotes safe and efficient navigation. Chart carriage is mandatory on the commercial ships that carry America's commerce. They are also used on every Navy and Coast Guard ship, fishing and passenger vessels, and are widely carried by recreational boaters.

### What is a BookletChart™?

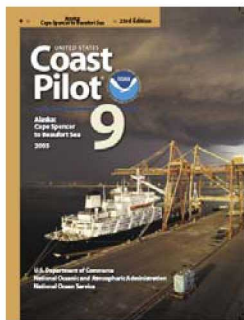
This BookletChart is made to help recreational boaters locate themselves on the water. It has been reduced in scale for convenience, but otherwise contains all the information of the full-scale nautical chart. The bar scales have also been reduced, and are accurate when used to measure distances in this BookletChart. See the Note at the bottom of page 5 for the reduction in scale applied to this chart.

Whenever possible, use the official, full scale NOAA nautical chart for navigation. Nautical chart sales agents are listed on the Internet at <http://www.NauticalCharts.NOAA.gov>.

This BookletChart does NOT fulfill chart carriage requirements for regulated commercial vessels under Titles 33 and 44 of the Code of Federal Regulations.

### Notice to Mariners Correction Status

This BookletChart has been updated for chart corrections published in the U.S. Coast Guard Local Notice to Mariners, the National Geospatial Intelligence Agency Weekly Notice to Mariners, and, where applicable, the Canadian Coast Guard Notice to Mariners. Additional chart corrections have been made by NOAA in advance of their publication in a Notice to Mariners. The last Notices to Mariners applied to this chart are listed in the Note at the bottom of page 7. Coast Pilot excerpts are not being corrected.



[Coast Pilot 9, Chapter 8 excerpts]

(254 ) **Kuskokwim Bay** and **Kuskokwim River** open into the Bering Sea N of the entrance to Bristol Bay. The bay, filled with many flats, and hard steep-to shoals, is entered between Cape Newenham and **Cape Avinof**, 93 miles NW.

(256 ) The 40-mile approach through **Eek Channel** to Kuskokwim River is a maze of shifting sandbars, both visible and covered, and blind channels. The channels in the bay and river undergo constant change from year

to year, because of the action of the sea, currents, and ice; extreme caution and continuous soundings are necessary.

(259 ) The channel through Kuskokwim Bay and up Kuskokwim River to Bethel is marked by seasonal buoys. The markers above Kuskokwim River Buoy 12 are oil drums that are set to mark the best water. The deepest draft that should attempt to reach Bethel is about 15 feet.

(260 ) **Caution:** In November 1983, the Coast Guard reported that as a result of flooding in the area in May 1983, about 20 ocean shipping containers were washed into the Kuskokwim River from the riverbank at the village of Napakiak, about 12 miles SW of Bethel. Reports indicate that several of the containers sank in the river near the village, and the remainder of the containers were carried downriver and sank. Mariners are advised to exercise caution in navigating Kuskokwim Bay and River. (302 ) **Bethel**, 65 miles up the Kuskokwim River, is considered the head of ocean navigation. From here river boats operate to points on the upper river. The diurnal range of tide is 4.0 feet, but the stage of the river influences the depth.

(303 ) Bethel Small Boat Harbor has berthing space for approximately 100 vessels. In August 2004, 3.1 feet was available in the access channel with shoaling to 2 feet along the S edge at the entrance and 3.5 feet was available in the basin with shoaling near the boat ramps. An overhead power cable with a clearance of 35 feet crosses the access channel to the small boat harbor.

(305 ) Bethel's climate is somewhat more maritime than continental in character, which tends to modify daily temperature extremes during most of the year. However, there are usually two periods during the year when the area becomes affected by continental climatic influences. In June and July, temperatures in the area rise noticeably under the influence of warmer continental air. Around the latter part of December and early January, cold, clear continental air becomes quite dominant, and Bethel's climate becomes quite similar to other areas farther inland. Extremes of temperature registered during these periods of dominant continental type climate range 134°F (74°C), from -48°F (-44.4°C) in January 1989 to 86°F (30°C) in July 1951 and again in June 1959. Average temperatures through the entire winter season, however, are considerably higher than those experienced in the Alaska interior, and temperatures for the entire summer season average considerably cooler than in the Alaska interior. The average annual temperature is 30°F (-1.1°C). The mean daily maximum in July is 62.4°F (16.9°C), while the mean daily minimum is 47.8°F (8.8°C). The coolest month, January, has a mean daily maximum of 12.7°F (-10.7°C) and a mean daily minimum of -0.6°F (-18.1°C). Annual precipitation averages nearly 17 inches (432 mm) and has ranged from 39.47 inches (1002.5 mm) in 1951 to an annual minimum of 7.29 inches (185.2 mm) in 1976. August is usually the wettest month, with an average of slightly over 3 inches (76 mm) of precipitation.

Thunderstorms are rare, the average being about two a year. The few thunderstorms that do occur are generally short in duration, but rather severe. They usually develop and move out of the NE during June and July. Snowfall averages about 53 inches (1346 mm) a year and has fallen in every month but July and August. On average, 142 days in a year see snowfall.

(307 ) At Bethel there is a large Alaskan Native Health Service Hospital, a National Guard Armory, a Moravian mission, several churches, hotels, and stores that are the distributors for the Kuskokwim district. Direct telephone communication, provisions, gasoline, and fuel oil are available. A limited amount of coal is kept on hand.

(328 ) The currents of Kuskokwim Bay and River are strong, attaining velocities of 5 knots at times. A strong tidal current sweeps past Cape Newenham, setting approximately N and S. Along the N side of the cape, tidal currents of about 1 knot have been observed setting NE and SW. In general, the currents set in directions parallel to the axes of the channels between the shoals. In the channel leading to Goodnews Bay, about 1 mile from the N end of South Spit, flood and ebb each has a velocity of about 2.5 knots, setting NE and SW, respectively. In the deep channels off Jacksmith Bay the flood current has a velocity usually of about 2 to 2.5 knots at strength, and the ebb from 2.5 to 3 knots. In the vicinity of Apokak Creek, the strongest current observed was 3.5 knots. The flood current is felt only about as far as Bethel.

(329 ) By arriving at the entrance to Eek Channel on the last of the ebb, a favorable current can be carried nearly to Bethel, providing there are no delays.



# Table of Selected Chart Notes

Corrected through NM Jan. 15/05  
Corrected through LNM Jan. 4/05

For Symbols and Abbreviations, see Chart No 1.

**SUPPLEMENTAL INFORMATION**  
Consult U.S. Coast Pilot 9 for important supplemental information.

**POLLUTION REPORTS**  
Report all spills of oil and hazardous substances to the National Response Center via 1-800-424-8802 (toll free), or to the nearest U.S. Coast Guard facility if telephone communication is impossible (33 CFR 153).

**CAUTION**  
Temporary changes or defects in aids to navigation are not indicated on this chart. See Local Notice to Mariners.

**AUTHORITIES**  
No hydrographic information is depicted on this preliminary chart. Topography collected and compiled by the National Ocean Service, with additional data from the U.S. Coast Guard.

**NOTE A**  
Navigation regulations are published in Chapter 2, U.S. Coast Pilot 9. Additions or revisions to Chapter 2 are published in the Notice to Mariners. Information concerning the regulations may be obtained at the Office of the Commander, 17th Coast Guard District in Juneau, Alaska, or at the Office of the District Engineer, Corps of Engineers in Anchorage, Alaska.  
Refer to charted regulation section numbers.

**AIDS TO NAVIGATION**  
Consult Office of the Commander, 17th Coast Guard District in Juneau, Alaska for supplemental information concerning aids to navigation.

**NOTE B**  
The deep draft channel from Kuskokwim Bay Buoy 12 (59°53'42"N., 162°15'22"W.) northward to Johnson River is marked by about 30 red or green oil drum buoys during the season of navigation.

**HORIZONTAL DATUM**  
The horizontal reference datum of this chart is North American Datum of 1983 (NAD 83), which for charting purposes is considered equivalent to the World Geodetic System 1984 (WGS 84). Geographic positions referred to the North American Datum of 1927 must be corrected an average of 2.739" southward and 8.225" westward to agree with this chart.

**WARNING**  
The prudent mariner will not rely solely on any single aid to navigation, particularly on floating aids. See U.S. Coast Guard Light List and U.S. Coast Pilot for details.

Additional information can be obtained at [nauticalcharts.noaa.gov](http://nauticalcharts.noaa.gov).

## LORAN-C GENERAL EXPLANATION

LORAN-C FREQUENCY.....100kHz  
PULSE REPETITION INTERVAL  
9990.....99,900 Microseconds  
STATION TYPE DESIGNATORS: (Not individual station letter designators).  
M.....Master  
W.....Secondary  
X.....Secondary  
Y.....Secondary  
Z.....Secondary

EXAMPLE: 9990-Y

## RATES ON THIS CHART

Loran-C correction tables published by the National Geospatial-Intelligence Agency or others should not be used with this chart. The lines of position shown have been adjusted based on theoretically determined overland signal propagation delays. They have not been verified by comparison with survey data. Every effort has been made to meet the 1/4 nautical mile accuracy criteria established by the U.S. Coast Guard. Mariners are cautioned not to rely solely on the lattices in inshore waters.

**CAUTION**  
This chart has been corrected from the Notice to Mariners (NM) published weekly by the National Geospatial-Intelligence Agency and the Local Notice to Mariners (LNM) issued periodically by each U.S. Coast Guard district to the dates shown in the lower left hand corner.

**PRINT-ON-DEMAND CHARTS**  
This chart is available in a version updated weekly by NOAA for Notices to Mariners and critical corrections. Charts are printed when ordered using Print-on-Demand technology. New Editions are available 5-8 weeks before their release as traditional NOAA charts. Ask your chart agent about Print-on-Demand charts.

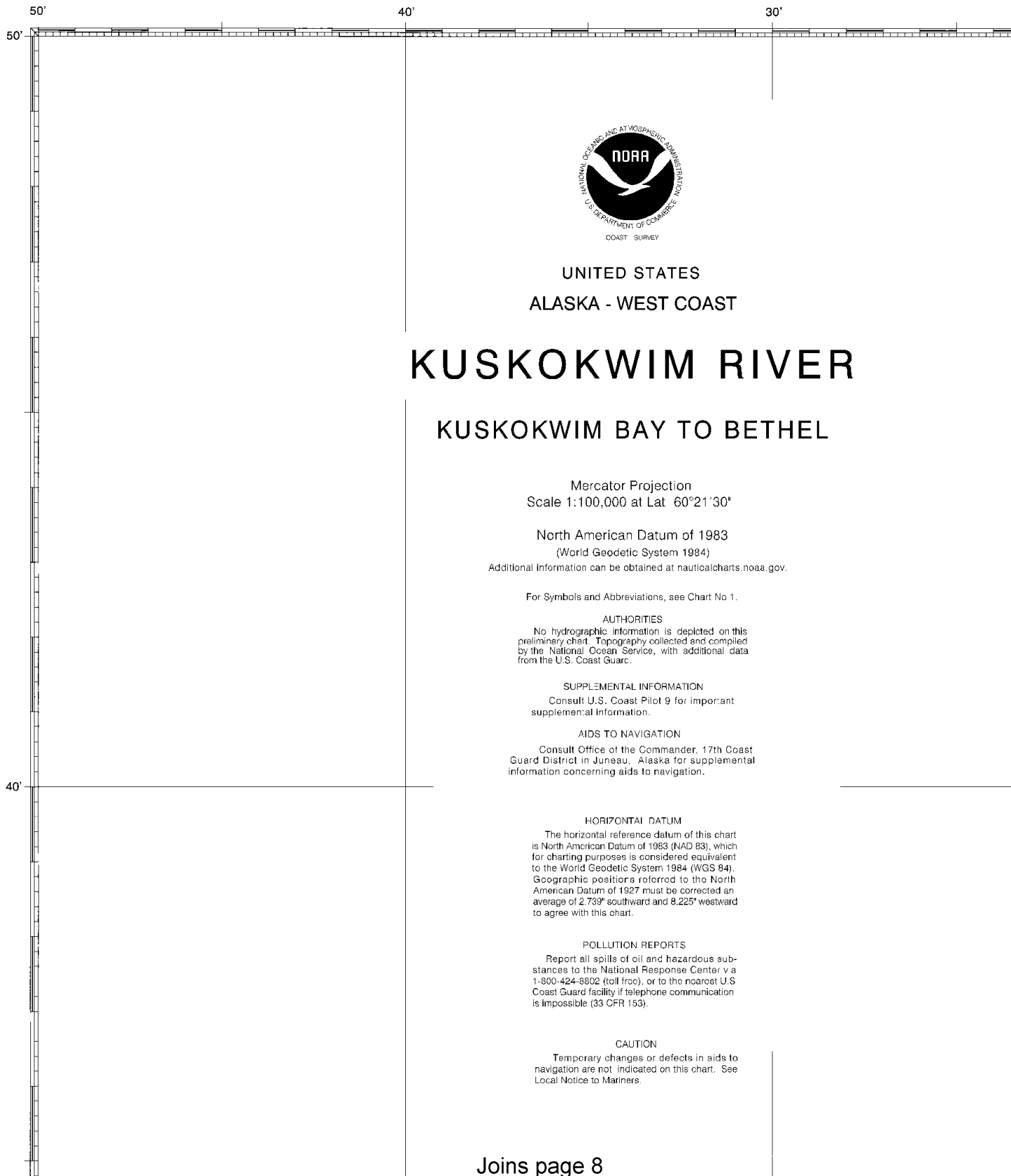
This nautical chart has been designed to promote safe navigation. The National Ocean Service encourages users to submit corrections, additions, or comments for improving this chart to the Chief, Marine Chart Division (N/CS2), National Ocean Service, NOAA, Silver Spring, Maryland 20910-3282.

# PRELIMINARY CHART

## 2005 EDITION

16304

LORAN-C OVERPRINTED



4



Printed at reduced scale.

SCALE 1:100,000

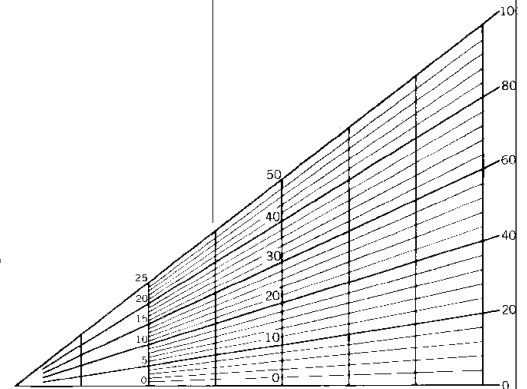
See Note on page 5.



20'

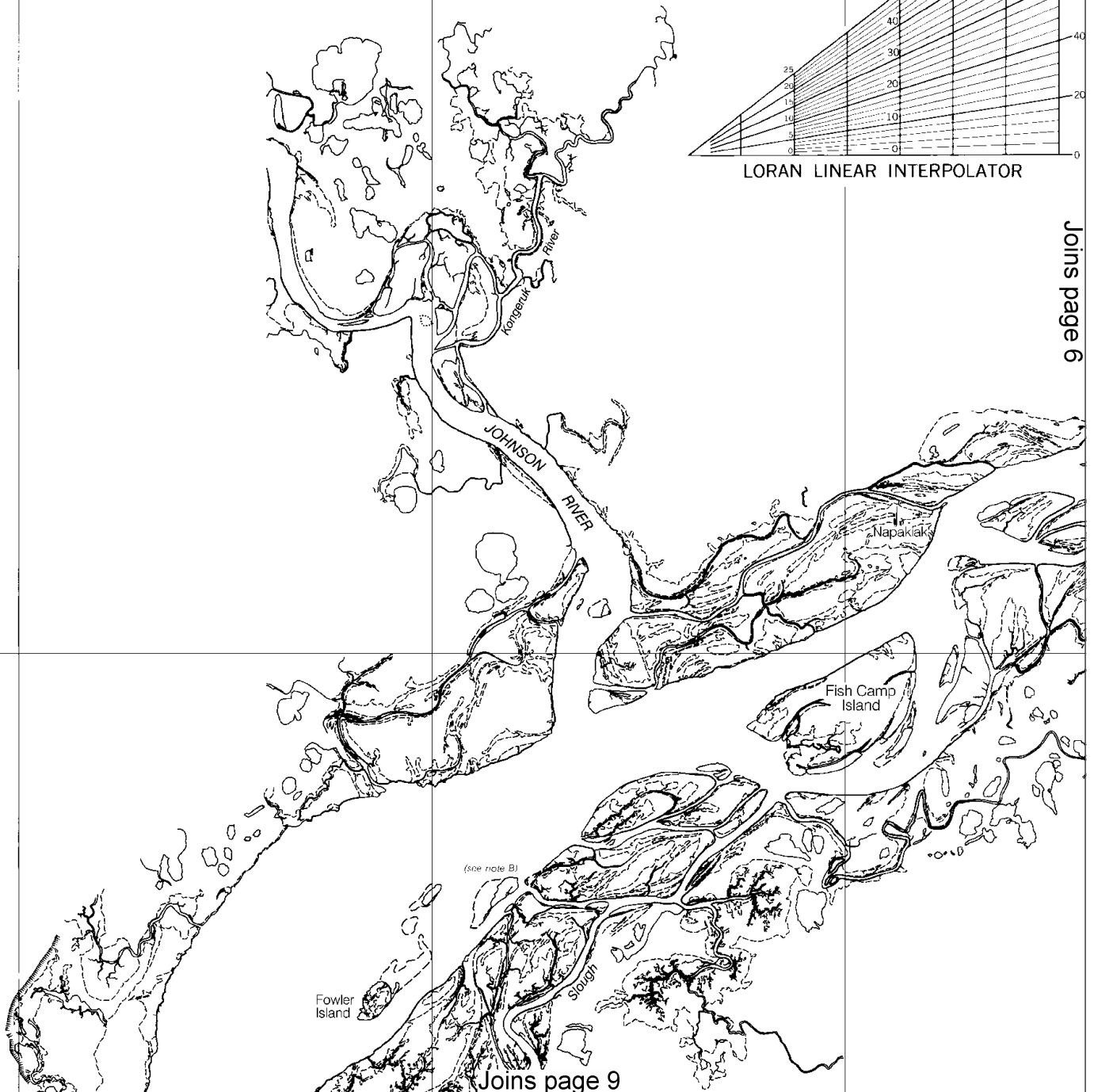
10'

162°



LORAN LINEAR INTERPOLATOR

Joins page 6



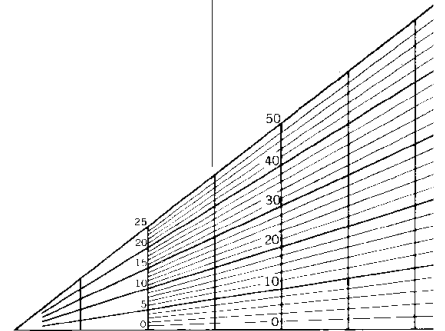
Joins page 9

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are accurate when used to measure distances in this BookletChart.

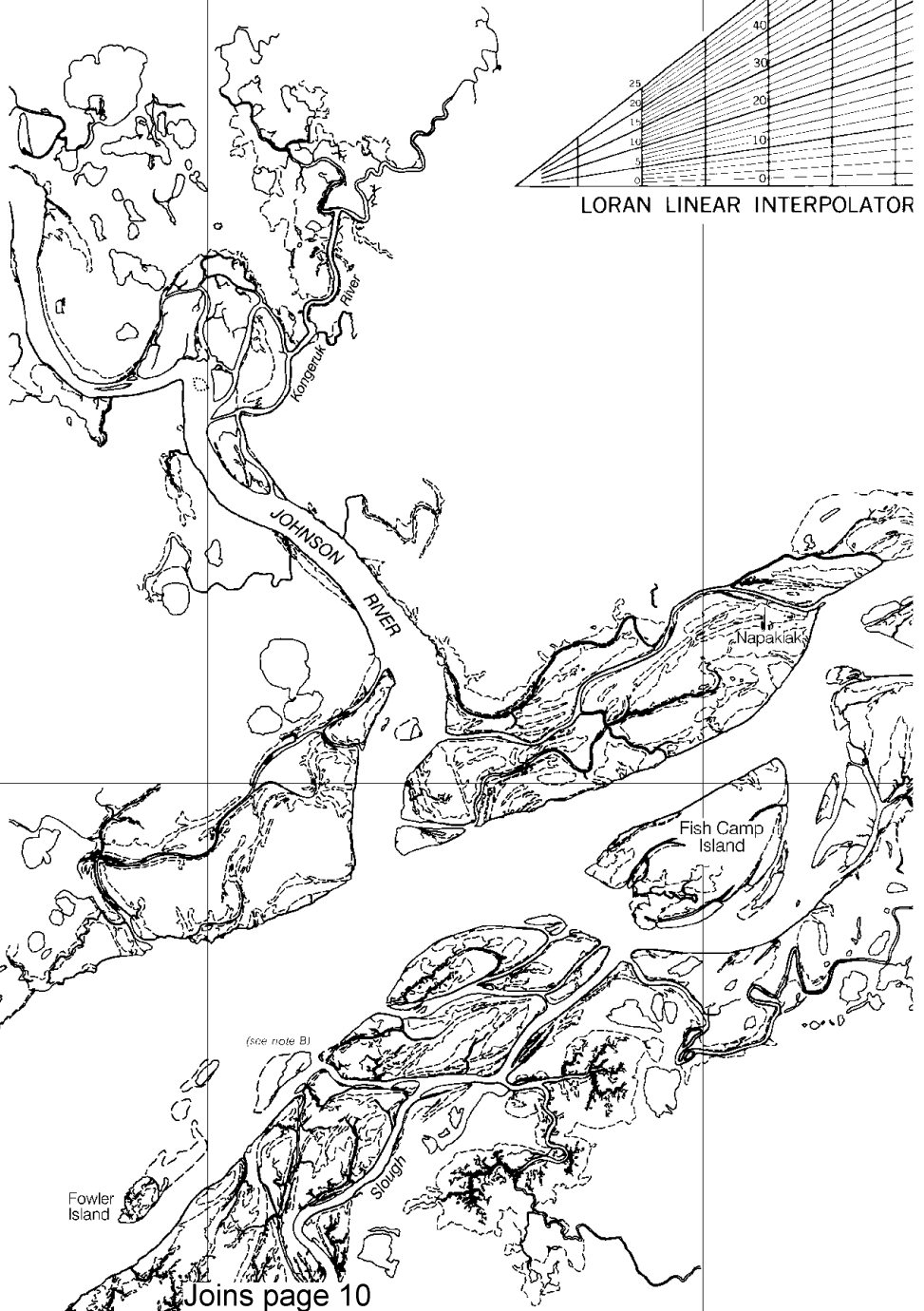
20'

10'

162°



LORAN LINEAR INTERPOLATOR



Joins page 5

Joins page 10

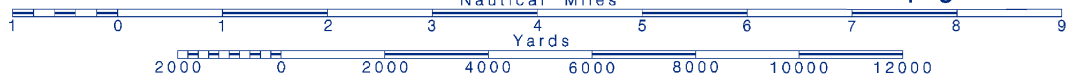
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Printed at reduced scale.

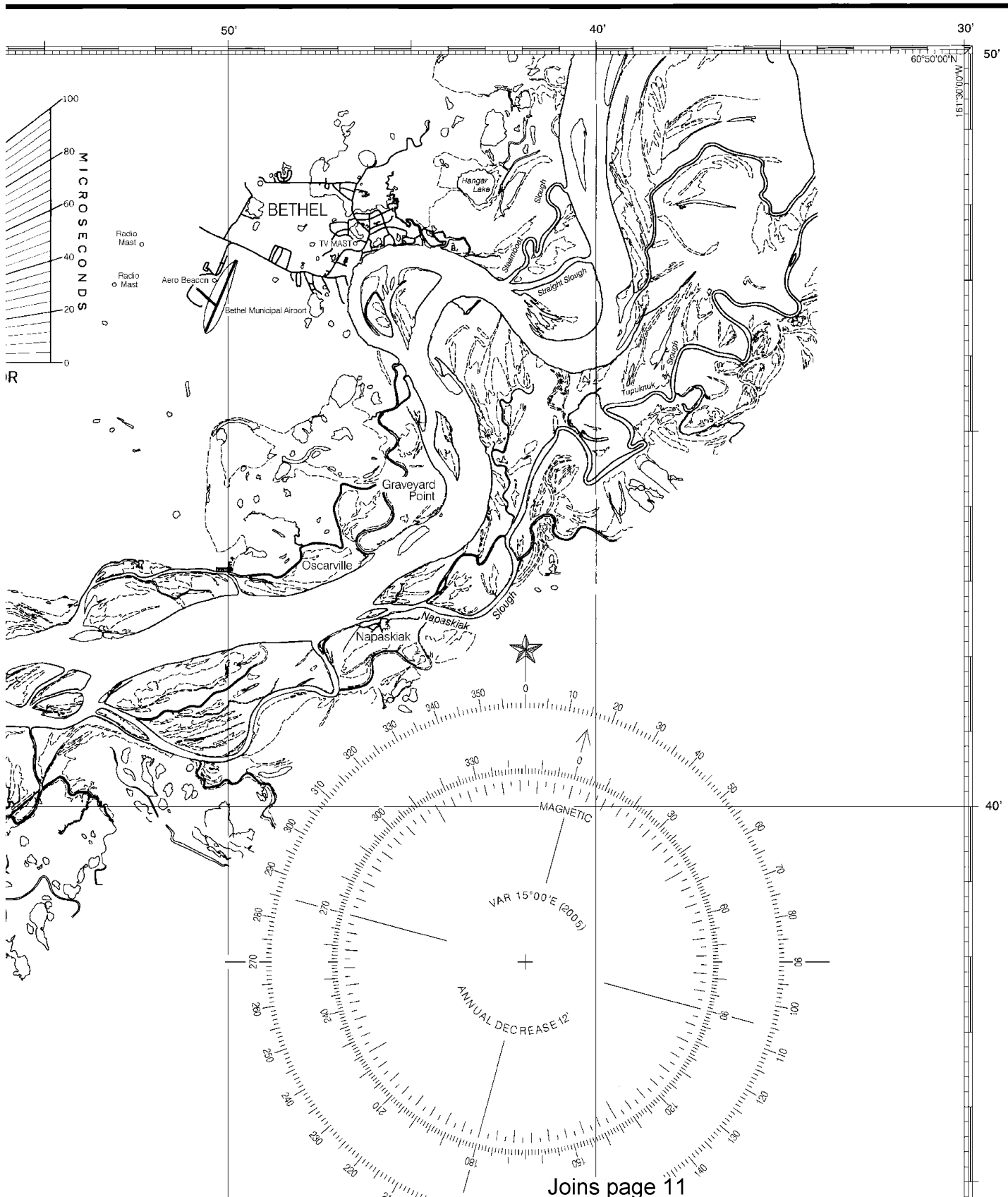
SCALE 1:100,000

See Note on page 5.



PRINT-ON-DEMAND CHARTS

This chart is available in a version updated weekly by NOAA for Notices to Mariners and critical corrections. Charts are printed when ordered using Print-on-Demand technology. New Editions are available 5-8 weeks before their release as traditional NOAA charts. Ask your chart agent about Print-on-Demand charts.



16304

LORAN-C OVERPRINTED

This BookletChart has been updated with: Coast Guard Local Notice To Mariners: 0710 2/16/2010,  
 NGA Weekly Notice to Mariners: 0910 2/27/2010,  
 Canadian Coast Guard Notice to Mariners: 0909 9/25/2009.

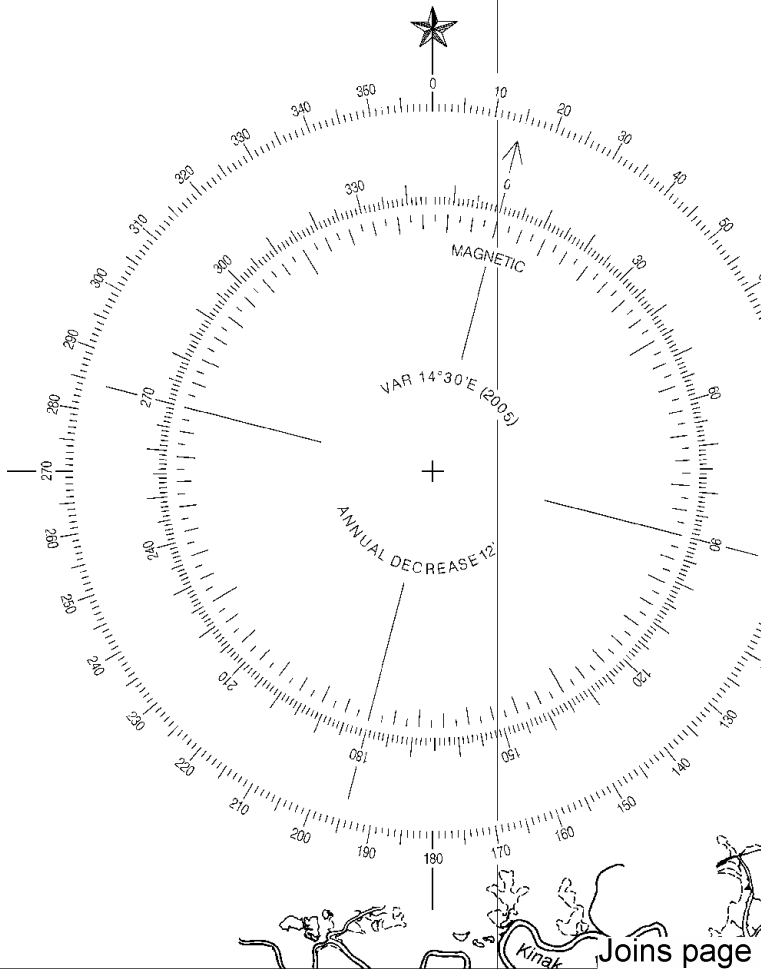


stances to the National Response Center via 1-800-424-8802 (toll free), or to the nearest U.S. Coast Guard facility if telephone communication is impossible (33 CFR 153).

CAUTION

Temporary changes or defects in aids to navigation are not indicated on this chart. See Local Notice to Mariners.

30'



Joins page 12

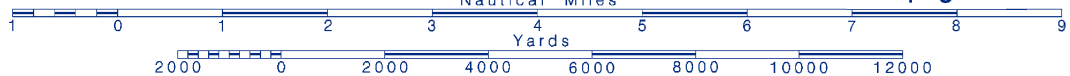
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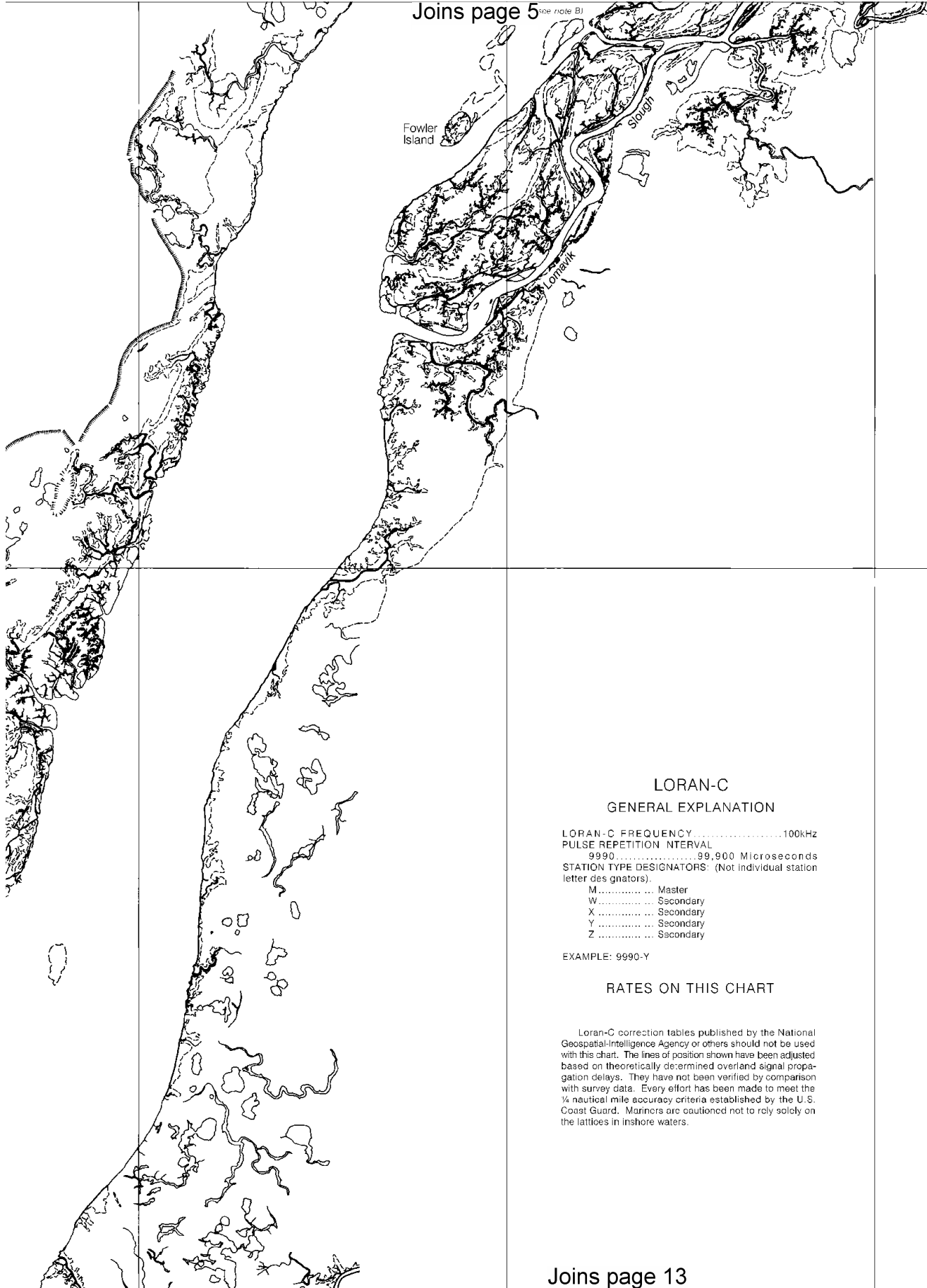
Printed at reduced scale.

SCALE 1:100,000

See Note on page 5.







### LORAN-C GENERAL EXPLANATION

LORAN-C FREQUENCY ..... 100kHz  
 PULSE REPETITION INTERVAL  
 9990 ..... 99,900 Microseconds  
 STATION TYPE DESIGNATORS: (Not individual station  
 letter designators).  
 M ..... Master  
 W ..... Secondary  
 X ..... Secondary  
 Y ..... Secondary  
 Z ..... Secondary

EXAMPLE: 9990-Y

### RATES ON THIS CHART

Loran-C correction tables published by the National Geospatial-Intelligence Agency or others should not be used with this chart. The lines of position shown have been adjusted based on theoretically determined overland signal propagation delays. They have not been verified by comparison with survey data. Every effort has been made to meet the 1/4 nautical mile accuracy criteria established by the U.S. Coast Guard. Mariners are cautioned not to rely solely on the lattices in inshore waters.

Joins page 6

(see note B)

Fowler Island

Slough

Lomaik

Joins page 9

## LORAN-C

### GENERAL EXPLANATION

LORAN-C FREQUENCY ..... 100KHz

PULSE REPETITION INTERVAL

9990 ..... 99,900 Microseconds

STATION TYPE DESIGNATORS: (Not individual station letter des gnators).

M ..... Master

W ..... Secondary

X ..... Secondary

Y ..... Secondary

Z ..... Secondary

EXAMPLE: 9990-Y

### RATES ON THIS CHART

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Joins page 14

10



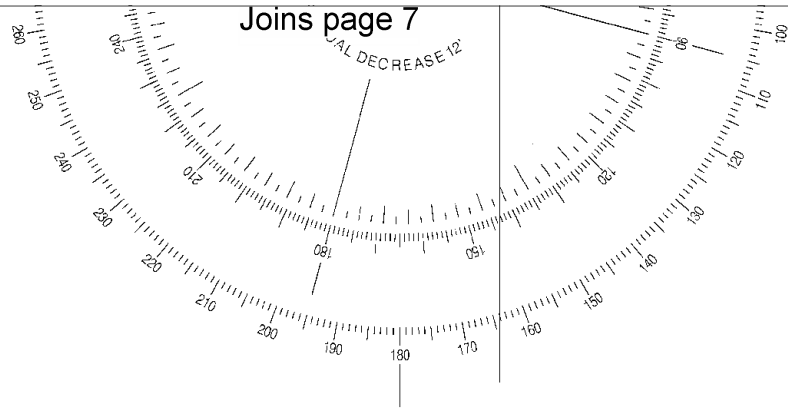
Printed at reduced scale.

SCALE 1:100,000  
Nautical Miles

See Note on page 5.



Joins page 7



30'

Joins page 15

Joins page 8

20'

10'

Kinak River

TAGAYARAK RIVER

Helmick Point

(see note B5)

West Point

Joins page 16

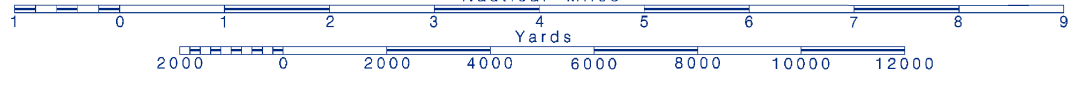
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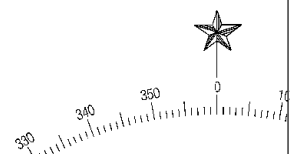
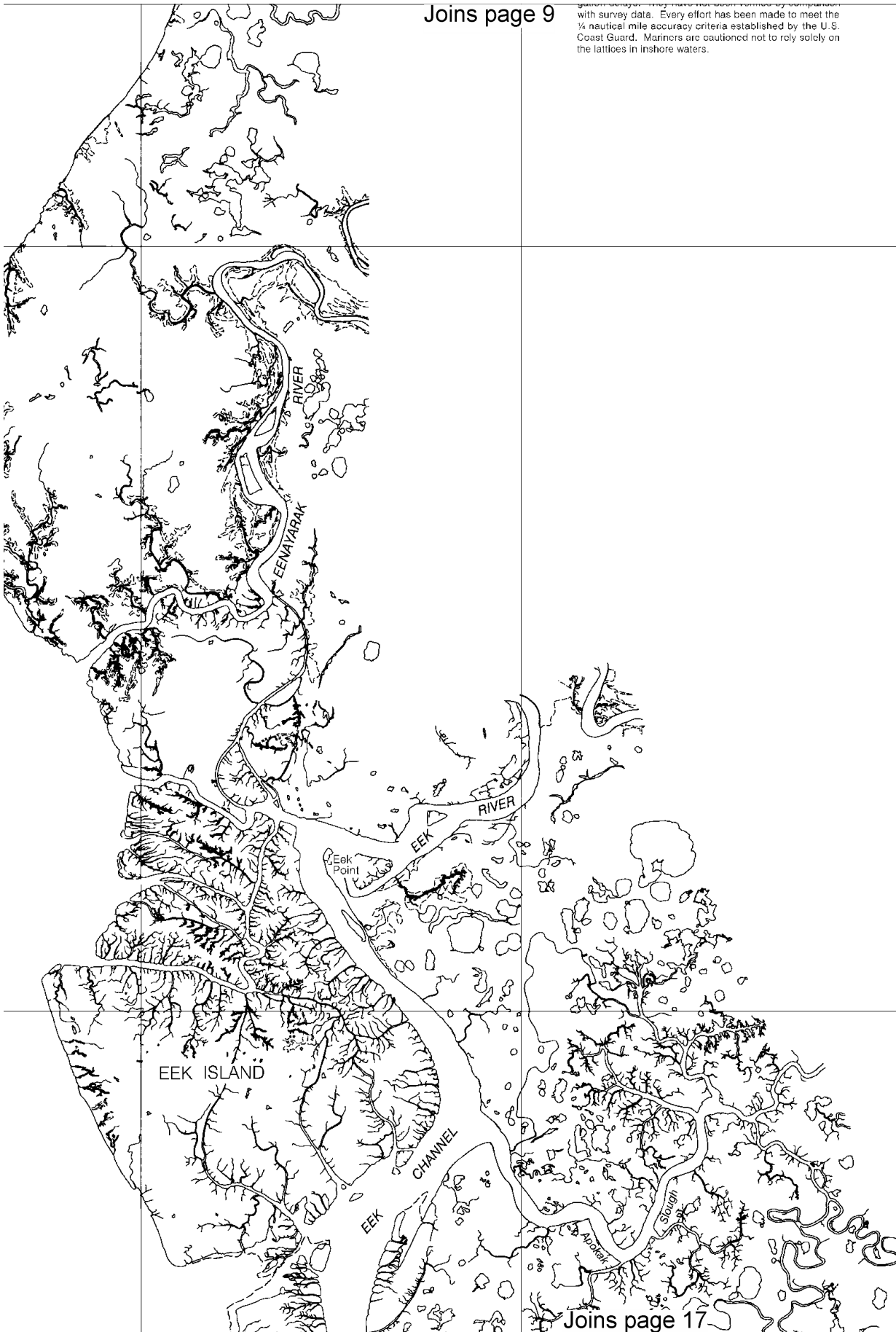
SCALE 1:100,000

See Note on page 5.





with survey data. Every effort has been made to meet the 1/4 nautical mile accuracy criteria established by the U.S. Coast Guard. Mariners are cautioned not to rely solely on the lattices in inshore waters.



Joins page 10

with survey data. Every effort has been made to meet the 1/4 nautical mile accuracy criteria established by the U.S. Coast Guard. Mariners are cautioned not to rely solely on the lattices in inshore waters.

Joins page 13

EEK ISLAND

EEK Point

CHANNEL

Joins page 18

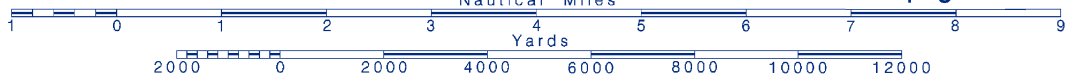
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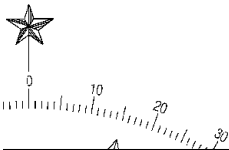
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See Note on page 5.



20'

10'



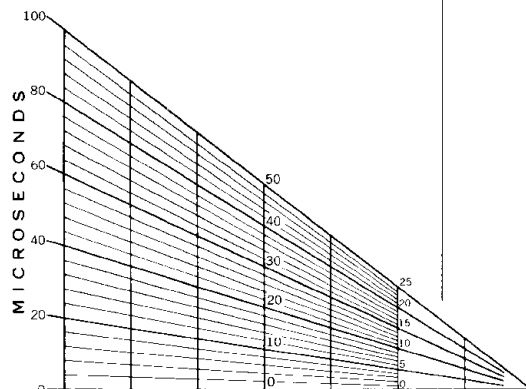


**WARNING**

The prudent mariner will not rely solely on any single aid to navigation, particularly on floating aids. See U.S. Coast Guard Light List and U.S. Coast Pilot for details.

**NOTE B**

The deep draft channel from Kuskokwim Bay Buoy 12 (59°53'42"N., 162°15'22"W.) northward to Johnson River is marked by about 30 red or green oil drum buoys during the season of navigation.



LORAN LINEAR INTERPOLATOR

**KUSKOK**

CONTINUED ON CHART 163C

2nd Ed, Jan./05 ■ Corrected through NM Jan. 15/05  
 16304 Corrected through LNM Jan. 4/05

LORAN-C OVERPRINTED

**CAUTION**

This chart has been corrected from the Notice to Mariners (NM) published weekly by the National Geospatial-Intelligence Agency and the Local Notice to Mariners (LNM) issued periodically by each U.S. Coast Guard district to the dates shown in the lower left hand corner.

**16**



Printed at reduced scale.

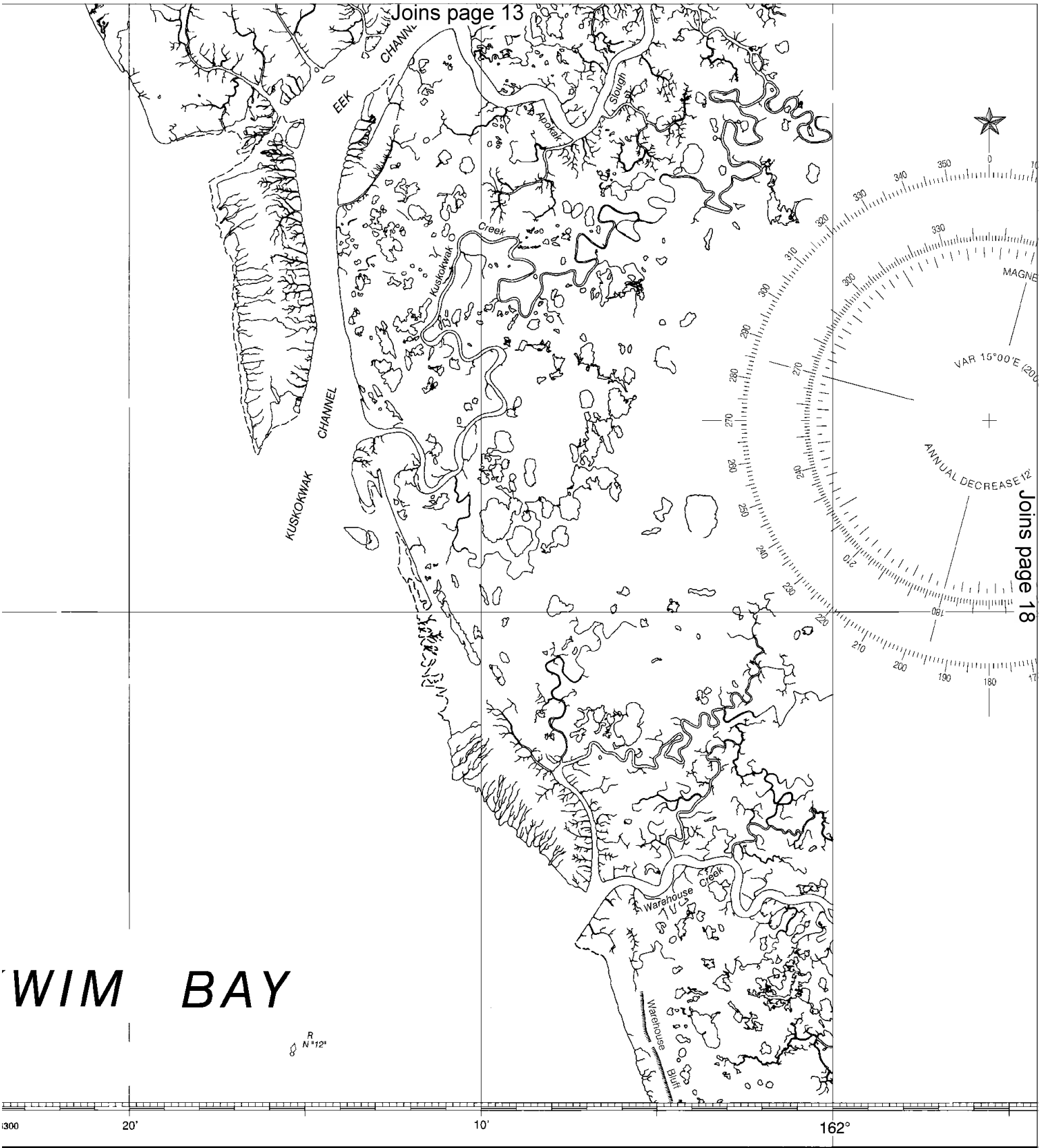
SCALE 1:100,000  
Nautical Miles

See Note on page 5.





Joins page 13



WIM BAY

Joins page 18

Published at Washington, D.C.  
U.S. DEPARTMENT OF COMMERCE  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
NATIONAL OCEAN SERVICE  
COAST SURVEY

PREL

Joins page 14

KUSKOKWAK CHANNEL

EEK CHANNEL

Apokak Slough

Ookak Creek

Kuskokwak

Warehouse Creek

Warehouse

Wharf

Joins page 17

KUSKOKWIM BAY

R  
N 12°

IN CHART 16300

20'

10'

162°

Published at Washington, D.C.  
U.S. DEPARTMENT OF COMMERCE  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
NATIONAL OCEAN SERVICE  
COAST SURVEY

PR

18

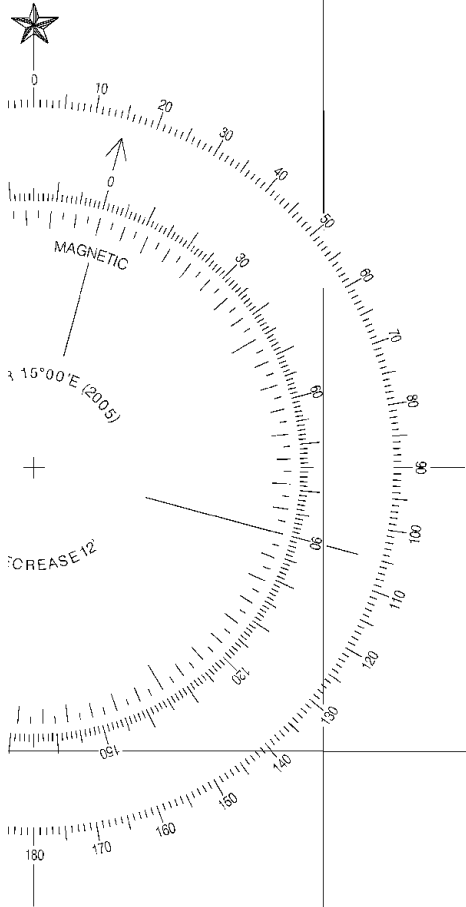


Printed at reduced scale.

SCALE 1:100,000

See Note on page 5.





NOTE A

Navigation regulations are published in Chapter 2, U.S. Coast Pilot 9. Additions or revisions to Chapter 2 are published in the Notice to Mariners. Information concerning the regulations may be obtained at the Office of the Commander, 17th Coast Guard District in Juneau, Alaska, or at the Office of the District Engineer, Corps of Engineers in Anchorage, Alaska.

Refer to charted regulation section numbers.

# WARNING

## PRELIMINARY CHART 2005 EDITION

Hydrography for this preliminary chart is not available. Navigators should use this chart with extreme caution and report discrepancies or hazards to the Chief, Marine chart Division N/CS2, National Ocean Service NOAA, Silver Spring, Maryland 20910-3282.



**PRELIMINARY CHART**  
2005 EDITION

Kuskokwim Bay to Bethel  
SCALE 1:100,000

**16304**  
LORAN-C OVERPRINTED



## EMERGENCY INFORMATION

### VHF Marine Radio channels for use on the waterways:

**Channel 6** – Inter-ship safety communications.

**Channel 9** – Communications between boats and ship-to-coast.

**Channel 13** – Navigation purposes at bridges, locks, and harbors.

**Channel 16 – Emergency, distress and safety calls** to Coast Guard and others, and to initiate calls to other vessels. Contact the other vessel, agree to another channel, and then switch.

**Channel 22A** – Calls between the Coast Guard and the public. Severe weather warnings, hazards to navigation and safety warnings are broadcast here.

**Channels 68, 69, 71, 72 & 78A** – Recreational boat channels.

### Distress Call Procedures

1. Make sure radio is on.
2. Select Channel 16.
3. Press/Hold the transmit button.
4. Clearly say: "MAYDAY, MAYDAY, MAYDAY."
5. Also give: Vessel Name and/or Description; Position and/or Location; Nature of Emergency; Number of People on Board.
6. Release transmit button.
7. Wait for 10 seconds – If no response Repeat MAYDAY Call.

### **HAVE ALL PERSONS PUT ON LIFE JACKETS !!**

**Mobile Phones** – Call 911 for water rescue.

**Coast Guard Search & Rescue (Pacific Coord)** – 510-437-3700

**Coast Guard Search & Rescue (RCC Juneau)** – 907-463-2000

**NOAA Weather Radio** – 162.400 MHz, 162.425 MHz, 162.450 MHz, 162.475 MHz, 162.500 MHz, 162.525 MHz, 162.550 MHz.

**Getting and Giving Help** – Signal other boaters using visual distress signals (flares, orange flag, lights, arm signals); whistles; horns; and on your VHF radio. You are required by law to help boaters in trouble. Respond to distress signals, but do not endanger yourself.



## NOAA CHARTING PUBLICATIONS

**Official NOAA Nautical Charts** – NOAA surveys and charts the national and territorial waters of the U.S, including the Great Lakes. We produce over 1,000 traditional nautical charts covering 3.4 million square nautical miles. Carriage of official NOAA charts is mandatory on the commercial ships that carry our commerce. They are used on every Navy and Coast Guard ship, fishing and passenger vessels, and are widely carried by recreational boaters. NOAA charts are available from official chart agents listed at: [www.NauticalCharts.NOAA.gov](http://www.NauticalCharts.NOAA.gov).

**Official Print-on-Demand Nautical Charts** – These full-scale NOAA charts are updated weekly by NOAA for all Notice to Mariner corrections. They have additional information added in the margin to supplement the chart. Print-on-Demand charts meet all federal chart carriage regulations for charts and updating. Produced under a public/private partnership between NOAA and OceanGrafix, LLC, suppliers of these premium charts are listed at [www.OceanGrafix.com](http://www.OceanGrafix.com).

**Official Electronic Navigational Charts (NOAA ENC<sup>®</sup>)** – ENC<sup>®</sup>s are digital files of each chart's features and their attributes for use in computer-based navigation systems. ENC<sup>®</sup>s comply with standards of the International Hydrographic Organization. ENC<sup>®</sup>s and their updates are available for free from NOAA at [www.NauticalCharts.NOAA.gov](http://www.NauticalCharts.NOAA.gov).

**Official Raster Navigational Charts (NOAA RNC<sup>™</sup>)** – RNC<sup>™</sup>s are geo-referenced digital pictures of NOAA's charts that are suitable for use in computer-based navigation systems. RNC<sup>™</sup>s comply with standards of the International Hydrographic Organization. RNC<sup>™</sup>s and their updates are available for free from NOAA at [www.NauticalCharts.NOAA.gov](http://www.NauticalCharts.NOAA.gov).

**Official BookletCharts<sup>™</sup>** – BookletCharts<sup>™</sup> are reduced scale NOAA charts organized in page-sized pieces. The "Home Edition" can be downloaded from NOAA for free and printed. The Internet address is [www.NauticalCharts.gov/bookletcharts](http://www.NauticalCharts.gov/bookletcharts).

**Official PocketCharts<sup>™</sup>** – PocketCharts<sup>™</sup> are for beginning recreational boaters to use for planning and locating, but not for real navigation. Measuring a convenient 13" by 19", they have a 1/3 scale chart on one side, and safety, boating, and educational information on the reverse. They can be purchased at retail outlets and on the Internet.

**Official U.S. Coast Pilot<sup>®</sup>** – The Coast Pilots are 9 text volumes containing information important to navigators such as channel descriptions, port facilities, anchorages, bridge and cable clearances, currents, prominent features, weather, dangers, and Federal Regulations. They supplement the charts and are available from NOAA chart agents or may be downloaded for free at [www.NauticalCharts.NOAA.gov](http://www.NauticalCharts.NOAA.gov).

**Official On-Line Chart Viewer** – All NOAA nautical charts are viewable here on-line using any Internet browser. Each chart is up-to-date with the most recent Notices to Mariners. Use these on-line charts as a ready reference or planning tool. The Internet address is [www.NauticalCharts.gov/viewer](http://www.NauticalCharts.gov/viewer).

**Official Nautical Chart Catalogs** – Large format, regional catalogs are available for free from official chart agents. Page size, state catalogs are posted on the Internet and can be printed at home for free. Go to <http://NauticalCharts.NOAA.gov/mcd/ccatalogs.htm>.

**Internet Sites:** [www.NauticalCharts.NOAA.gov](http://www.NauticalCharts.NOAA.gov), [www.NOAA.gov](http://www.NOAA.gov), [www.TidesandCurrents.NOAA.gov](http://www.TidesandCurrents.NOAA.gov), [www.NOS.NOAA.gov](http://www.NOS.NOAA.gov).